Science Education

CONTENTS TO VOLUME 84, 2000

Issue 1, January

Editorial: Building Community While Raising Standards
Richard A. Duschl 1

Historical Case Studies: Teaching the Nature of Science in Context
Allan R. Irwin 5

Hot-Air Balloons: Project-Centered Study as a Bridge between Science and Technology Education
Moshe Barak and Eli Raz 27

SCIENCE TEACHER EDUCATION, *Julie Gess-Newsome, Section Editor*

Understanding the Learning Cycle: Influences on Abilities to Embrace the Approach by Preservice Elementary School Teachers
John Settlage 43

ISSUES AND TRENDS, *Stephen Norris, Section Editor*

Exploring a Process View of Students' Knowledge about the Nature of Science
Kathleen Hogan 51

Scientific Literacy: A Conceptual Overview
Rüdiger C. Laugksch 71

INFORMAL SCIENCE, *Lynn D. Dierking and John H. Falk, Section Editors*

Formal and Informal Collaborative Projects: Engaging in Industry with Environmental Awareness
Yehudit J. Dori and Revital T. Tal 95

THE BOOKS, *Hugh Munby, Peter Chin, and Andréa Mueller, Section Editors*

Postmodernism versus Science versus Fundamentalism: An Essay Review of Science Wars, The Flight from Science and Reason, and The Creation Hypothesis: Scientific Evidence for an Intelligent Designer
Stephen Brush 114

Achieving Scientific Literacy: From Purposes to Practices
Douglas A. Roberts 123

The Biotech Century: Harnessing the Gene and Remaking the World and Frankenstein's Footsteps: Science, Genetics and Popular Culture
Patrick Colgan 127

Issue 2, March

A Model of Problem Solving: Its Operation, Validity, and Usefulness in the Case of Organic-Synthesis Problems
Georgios Tsaparlis and Vasileios Angelopoulos 131

VOLUME CONTENTS

Equity for Black Americans in Precollege Science
Mary Monroe Atwater 154

Gender Differences in Students' Experiences, Interests, and Attitudes toward Science and Scientists
M. Gail Jones, Ann Howe, and Melissa J. Rua 180

SCIENCE TEACHER EDUCATION, *Julie Gess-Newsome, Section Editor*

School Science Culture: A Case Study of Barriers to Developing Professional Knowledge
Hugh Munby, Malcolm Cunningham, and Cinde Lock 193

The Use of Secondary Science Classroom Teaching Assistant Experiences to Recruit Academically Talented Science Majors into Teaching
Debra Tomanek and Katharine E. Cummings 212

LEARNING, *Peter W. Hewson, Section Editor*

On an Actual Apparatus for Conceptual Change
Douglas Macbeth 228

INFORMAL SCIENCE, *Lynn D. Dierking and John H. Falk, Section Editors*

Thinking Scientifically during Participation in a Citizen-Science Project
Deborah J. Trumbull, Rick Bonney, Derek Bascom, and Anna Cabral 265

THE BOOKS, *Hugh Munby, Peter Chin, and Andréa Mueller, Section Editors*

Philosophy and Biology
María Pilar Jimenez Aleixandre 276

Engineering Ethics: Balancing Cost, Schedule, and Risk—Lessons Learned from the Space Shuttle
Dana L. Zeidler 278

Isaac Newton: Adventurer in Thought
Arthur Stinner 280

Issue 3, May

Establishing the Norms of Scientific Argumentation in Classrooms
Rosalind Driver, Paul Newton, and Jonathan Osborne 287

Teaching Genetics at Secondary School: A Strategy for Teaching about the Location of Inheritance Information
Enrique Banet and Enrique Ayuso 313

Learning about Atoms, Molecules, and Chemical Bonds: A Case Study of Multiple-Model Use in Grade 11 Chemistry
Allan G. Harrison and David F. Treagust 352

From Inert Object to Chemical Substance: Students' Initial Conceptions and Conceptual Development during an Introductory Experimental Chemistry Sequence
Christina Solomonidou and Heleni Stavridou 382

CULTURE AND COMPARATIVE STUDIES, *William W. Cobern, Section Editor*

UNITWIN/UNESCO Chairs Program and Capacity Building in Science and Technology in Southern Africa
M. B. Ogunniyi 401

THE BOOKS, *Hugh Munby, Peter Chin, and Andréa Mueller, Section Editors*

The Forgiving Air: Understanding Environmental Change
Pradeep M. Dass 418

Storm over a Mountain Island: Conservation Biology and the Mt. Graham Affair
Kathleen Hogan 420

Portraits of Productive Schools: An International Study of Institutionalizing Activity-Based Practices in Elementary Science
Steve Sizmur 424

Books Received 428

Issue 4, July

Anomalies and Conflicts in Classroom Discourse
Eduardo F. Mortimer and Andréa H. Machado 429

The Religion-in-the-Science-Classroom Issue: Seeking Graduate Student Conceptual Change
Cathleen C. Loving and Andrea Foster 445

Epistemological Undercurrents in Scientists' Reporting of Research to Teachers
George E. Glasson and Michael L. Bentley 469

LEARNING, *Peter W. Hewson, Section Editor*

A Metacognitive Learning Cycle: A Better Warranty for Student Understanding?
Lisa M. Blank 486

ISSUES AND TRENDS, *Stephen Norris, Section Editor*

Some Thoughts on Sharing Science
Ivan Brady and Alok Kumar 507

INFORMAL SCIENCE, *Lynn D. Dierking and John H. Falk, Section Editors*

One Teacher's Agenda for a Class Visit to an Interactive Science Center
Keith B. Lucas 524

Issue 5, September

Functional Fixedness and Functional Reduction as Common Sense Reasonings in Chemical Equilibrium and in Geometry and Polarity of Molecules
C. Furió, M. L. Calatayud, S. L. Bárcenas, and O. M. Padilla 545

The Effect of Talk and Writing on Learning Science: An Exploratory Study
Léonard P. Rivard and Stanley B. Straw 566

Weekly Reports: A Two-Way Feedback Tool
E. Etkina 594

Decision Making in the Practical Domain: A Model of Practical Conceptual Change
Allan Feldman 606

Experiments, Contingencies, and Curriculum: Providing Opportunities for Learning through Improvisation in Science Teaching
Gregory J. Kelly, Candice Brown, and Teresa Crawford 624

VOLUME CONTENTS

INFORMAL SCIENCE, *Lynn D. Dierking and John H. Falk, Section Editors*

Development of Knowledge about Electricity and Magnetism during a Visit to a Science Museum and Related Post-Visit Activities
David Anderson, Keith B. Lucas, Ian S. Ginns, and Lynn D. Dierking 658

THE BOOKS, *Hugh Munby, Peter Chin, and Andréa Mueller, Section Editors*

Selling Science: How the Press Covers Science and Technology
John Olson 680

DNA Pioneers and Their Legacy
Audra J. Wolfe 682

Connecting Research in Physics Education with Teacher Education
Shelley Yeo and David Treagust 685

Issue 6, November

A Curricular Frame for Physics Education: Development, Comparison with Students' Interests, and Impact on Students' Achievement and Self-Concept
Peter Häussler and Lore Hoffmann 689

The Development of a Questionnaire to Describe Science Teacher Communication Behavior in Taiwan and Australia
Hsiao-Ching She and Darrell Fisher 706

Procedural Apprenticeship in School Science: Constructivist Enabling of Connoisseurship
J. Lawrence Bencze 727

The Effects of Instructors' Autonomy Support and Students' Autonomous Motivation on Learning Organic Chemistry: A Self-Determination Theory Perspective
Aaron E. Black and Edward L. Deci 740

"Doing the Lesson" or "Doing Science": Argument in High School Genetics
M. Pilar Jiménez-Aleixandre, Anxela Bugallo Rodgríguez, and Richard A. Duschl 757

THE BOOKS, *Hugh Munby, Peter Chin, and Andréa Mueller, Section Editors*

Women's Science: Learning and Succeeding from the Margins
Caroline R. Astell 793

Procedures of Power and Curriculum Change: Foucault and the Quest for Possibilities in Science Education
Jim Donnelly 796

Books Received 799

Acknowledgment of Special Reviewers 800

Volume 84 Author Index 803

Volume 84 Contents I